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INFORMATION REPORT

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SUBJECT DON-SODA Chemical Plant in Verkhneye

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[redacted]

THIS IS UNEVALUATED INFORMATION

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1. The DON-SODA chemical plant was located in the northeastern section of the town of Verkhneye (48°52'N/38°28'E), 4 km southeast of Lisichansk (48°50'N/38°22'E). The plant area was bordered on the east by the Donets River, on the southwest by the shunting tracks of the Pereyezdnaya railroad station of Verkhneye, and on the south by a narrow tributary of the Donets River. A southbound railroad spur led from the Pereyezdnaya railroad station to the plant area where it branched into several tracks. The GRES thermo-electric power plant (Gosudarstvennaya Rayonnaya Elektro-Stantsiya (State-owned district power plant) adjoined the soda plant on the east. The electric power plant was served by a railroad spur track from the soda plant. There were roads leading from the plant in every direction.

2. The designation of the plant was DON-SODA (an abbreviation of Donetskiy Sodovyy Zavod) (Donets Soda Plant). The plant was established in 1890. The first departments constructed were put into operation in 1892. In 1928, the plant was considerably expanded. During World War II, the installations were almost completely destroyed. Reconstruction was started in 1944 and was almost completed by early 1949, except for installing part of the equipment. ILLEGIB [redacted]

3. The side of the plant area bordered by the railroad line was about 600 meters long, the side bordered by the Donets River was about 500 meters long, and the south side was about 500 meters long. Most of the equipment installed in the reconstructed buildings of the plant consisted of dismantled German industrial installations. In addition to the production departments, the plant included a number of workshops used partly for reconstruction work and partly for repair work. There were also administration and office buildings, laboratories, and kitchen and mess buildings. * ILLEGIB [redacted]

4. The plant was operated according to the ammonia-soda method of Solvay. The chalk, supplied by a cable railway, was crushed in a stone-crushing installation and then was baked in two oil-fired rotating, tubular kilns about 40 meters long. In the soda department, the brine was collected in several rotating drums and was saturated with ammonia in about 15 adsorption columns. The brine was carbonated in the same department. The waste gases from the lime-burning department were brought to the soda department for this purpose. A small portion of the sodium bicarbonate solution obtained by this method was processed into pure sodium bicarbonate to be used for pharmaceutical and nutritional purposes. Most of the bicarbonate solution, however, was de-

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composed and was mostly processed into calcined soda. Small quantities of the bicarbonate solution were processed into soda crystals for household use. The plant also included an alkali chloride electrolysis department, using mercury cells and a large installation for the production of caustic soda (sodium hydroxide). Acids, such as sulphuric and hydrochloric acids, were made in a special installation. Another large department allegedly manufactured chemical warfare decontamination agents.

5. The main product of the plant was soda, both in calcined form and soda crystals. In mid-1949, the rate of production was allegedly about 95,000 tons per year. Other products of the plant were sodium bicarbonate, sodium hydroxide, chlorine, acids, and decontamination agents. Approximately half the production of this plant was consumed by the chemical plants in Lisichansk and Rubezhnaya (49°01'N/38°23'E), while the rest was supplied to more distant factories. **

6. Raw materials included brine which was obtained from the sodium chloride deposits in the vicinity and was pumped through pipe lines to the plant. Lime in the form of chalk was supplied from the quarries near Sokmenyovka (48°40'N/38°22'E), located 9 km southwest of the plant, by a cable railway which was constructed during World War I. The plant had its own coal pits, from which the hard coal required was obtained. The plant also used coal gas which was supplied by a pipe line about 80 cm in diameter, from the Podzemgaz underground-coal-gasifying plant located about 6 km northwest of Verkhneye. Power was supplied to the plant from the GRES power plant adjoining the installation. Steam was supplied to the individual departments from a plant-owned boiler house, equipped with three boilers. ***

7. In mid-1949, the plant had about 2,000 employees, working three 8-hour shifts. A large percentage of the workers were women. The entire area of the plant was surrounded by a board fence reinforced with barbed wire. A number of watchtowers were installed along the fence. The plant was guarded by military units, MVD troops, and civilian plant police. A number of
ILLEGIB buildings were separately guarded. The town of Verkhneye was equipped with fire engines and the installation had a plant-owned fire brigade.

25X1 * [redacted] Comment. For layout sketch of the DON-SODA and GRES plants, see Annex. This sketch was based on an aerial picture of mid-1943 and on [redacted]

25X1 ** [redacted] Comment. Upon completion of the expansion and modernization commenced in 1928, the rate of production according to official announcements in 1933 was 170,000 tons of calcined soda, 27,000 tons of caustic soda (sodium hydroxide), and 18,000 tons of sodium bicarbonate. The quota at the end of 1942 was set at 420,000 tons of calcined soda per year. [redacted] 25X1
25X1 [redacted] the rate of production of the reconstructed plant in mid-1949 was as low as 100,000 tons per year. Since the reconstructed plant was not any smaller than the original plant was before the war, it is believed that the rate of production increased considerably after 1949. Another plant manufacturing the same type of products, the SLAV-SODA plant, is located about 60 km west of Verkhneye in Slavyansk (48°52'N/37°37'E). The production process used by this plant is also based on the lixiviation of the salt deposits located a short distance from the plant. In the past, the SLAV-SODA plant has never equalled the rate of production of the DON-SODA plant. These two plants are the largest producers of soda, caustic soda, bicarbonate, and their by-products in the Soviet Union.

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**** [redacted] Comment. The DON-SODA plant processes the extensive deposits of sodium chloride located around Verkhneye and Lisichansk. The most important of these deposits is that near Karfagen, about 37 km from the plant. The brine processed at the DON-SODA plant contains 31.01 grams NaCl (sodium chloride), 5.53 grams $CaSO_4$ (calcium sulphate), 0.20 grams $MgCl_2$ (magnesium chloride) and 0179 grams $CaCl_2$ (calcium chloride), per liter. The $CaCO_3$ (carbonate-of-lime) content of the chalk at Sokrenyevka varies between 76 and 85 percent.

LEGEND: see next page

Attachment

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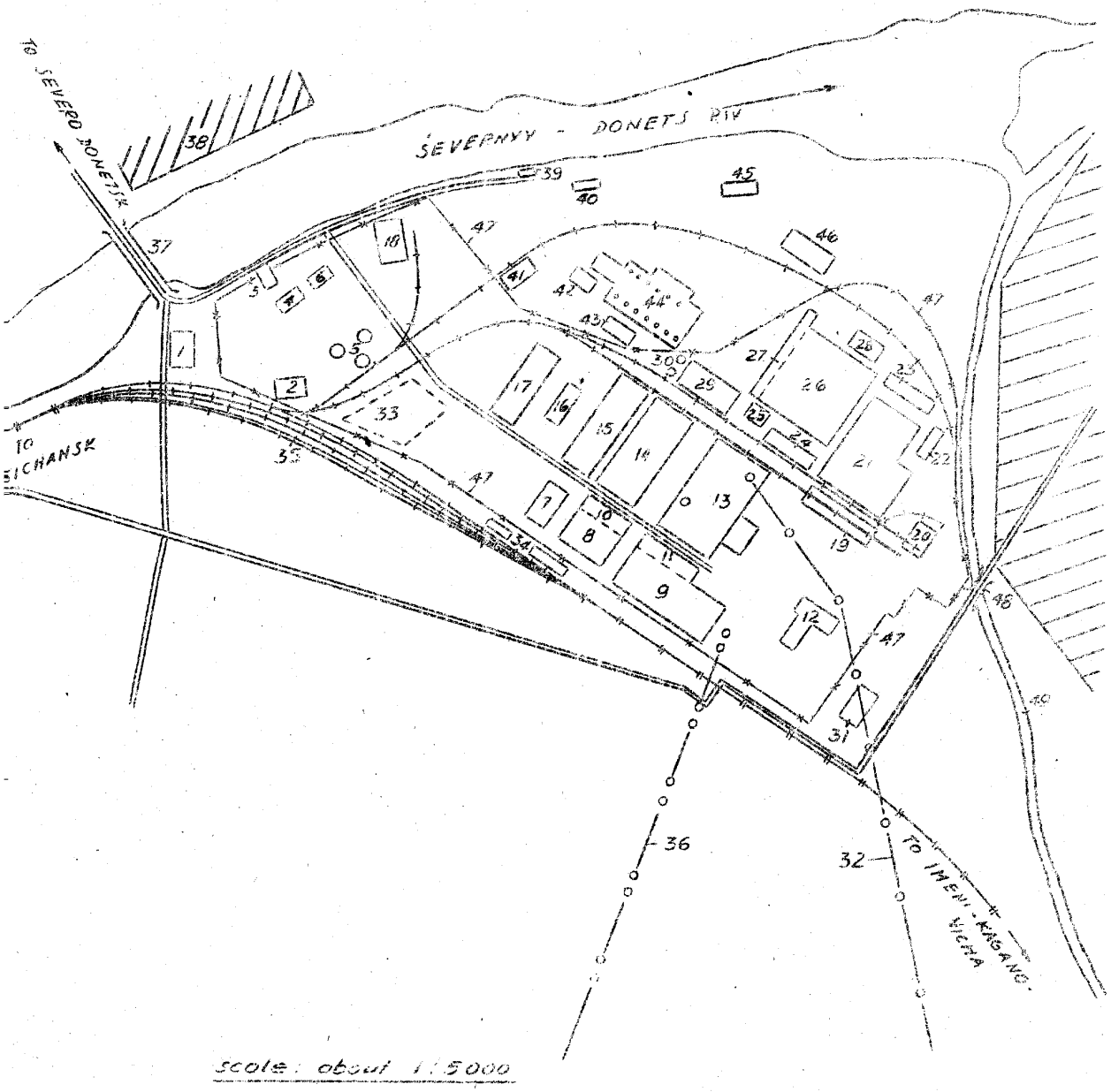
Chemical Plant Don Soda including the
Electric Power Plant Gres in Verkhneye



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Attachment

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Legend:

1. Department for the production of building parts and slab concrete stones.
2. Brick building, used as a storehouse for railway materials, including railroad car wheels and axles.
3. Guardhouse.
4. Machine shop used for plant construction work.
5. Three oil tanks about 10 meters high and 8 meters in diameter.
6. Wood-working shop used for plant construction.
7. Electric workshop, in which storage batteries were also repaired.
8. Soda and sodium hydroxide warehouse.
9. Soda and sodium hydroxide warehouse.
10. Lathe shop used for plant repair work.
11. Warehouse for spare parts for the soda department.
12. Administration and office building.
13. Soda department, located in a brick and steel building, equipped with eight oil-fired drum furnaces used in producing brine and about 15 adsorption columns used to adsorb ammonia. There was a brick smokestack, about 70 meters high, on the northeast side of the building.
14. Sodium hydroxide department, located in a steel and brick building, equipped with four oil-fired caustification furnaces (Kaustifizierofen).
15. Foundry with molding shop, equipped with two small smelting furnaces used to make spare parts for the soda plant, and three traveling cranes.
16. Boiler house, a steel and brick building, equipped with three steam-generating boilers. There was a brick smokestack on the southeast wall.
17. Warehouse for finished goods.
18. Carpentry shop and wood-working shop.
19. Storage shed with loading ramps for finished goods.
20. Soda warehouse with a railroad track leading into the building.
21. Workshop used in the production of calcium hypochlorite (Losantin) and other chemical warfare decontamination agents for the army; a six-story building with a smokestack, about 70 meters high.
22. Tinsmith's shop.
23. Wooden warehouse for building materials.

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Attachment
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24. Carpentry shop, a wooden structure.

25. Plant laboratory, a three-story, brick building.

26. Workshop for the alkali chloride electrolysis department, a steel and brick building.

27. Acid-manufacturing department, located in a steel and brick structure.

28. Warehouse for food.

29. Warehouse for finished goods.

30. Two ammonia tanks.

31. Lime kiln installation.

32. Cable railway from Sekmenyevka used to transport chalk to the lime kilns and caustic lime to the soda department.

33. Storage area for industrial equipment dismantled in Germany.

34. Flour mill and bread factory.

35. Track installations of the Pereyezdnaya freight station.

36. Pipe line for brine.

37. Wooden bridge over the Donets River.

38. Settlement with cantonment buildings for PW Camp No 7125/1.

39. Guardhouse.

40. Workshop with tube-bending installation for the boilers of the electric power plant.

41. Coal mill.

42. Pumphouse.

43. Repair shop.

44. Boiler and turbine house of the electric power plant, equipped with 12 coal and oil-fired vertical boilers. In mid-1949, four turbines were in operation and six other turbines were being repaired and assembled.

45. Warehouse for spare parts.

46. Administration building.

47. Fence around the DCH-SODA plant.

48. Small wooden bridge.

49. Tributary of the Donets River.